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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,195	07/08/2003	Yuzo Hirayama	04329.3091	6325

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EXAMINER	
MOON, SEOKYUN	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
11/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,195	HIRAYAMA ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claim 15 has been amended to overcome the previous objection to the claim. Accordingly, the objection has been withdrawn.

Response to Arguments

2. The Applicants' arguments with respect to claims 1, 8, 9, and 16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamagishi (US 2004/0130503) in view of Yuji (JP Pub. 08-101367).

As to **claim 1**, Hamagishi teaches a 3D image reproduction apparatus [title] comprising:

a display (a combination of "*backlight 312*" and "*liquid crystal display panel 313*") [fig. 18 and par. (0123) lines 6-9] including a screen ("*liquid crystal display panel 313*") on which a plurality of pixels are arranged to display synthesis parallax images (in a stereoscopic three dimensional display, the images formed on the display is observed as synthesis parallax images to the device-user, and thus the images are displayed as three-dimensional images) [par. (0064) line 2] in units of arrayed sub regions [fig. 1 and par. (0066) lines 3-4], wherein the screen includes three pixels that differ in color [par. (0066) lines 7-8], and

parallax information is assigned to each of the pixels in units of horizontally arranged pixels [par. (0066) lines 5-10]; and

an optical system (a combination of "*pinhole array 314*" and "*micro-lens array 316*") [fig. 18 and par. (0123) lines 9-14] arranged in front of the screen of the display, forming a 3D image by an integral photography system or a beam reproduction system [par. (0001) lines 1-3] from synthesis parallax images displayed on the screen in units of arrayed sub regions.

Hamagishi does not expressly teach each of the pixels including three sub pixels that differ in color.

However, Examiner takes official notice that it is well known in the art to use sub pixels having different colors to create a color image, instead of using pixels having different colors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify each of the pixels of the display of Hamagishi to include three sub pixels that differ in color, in order to reduce the size of a display element capable of displaying any color, and thus to improve the resolution of the display (i.e. using three sub pixels to create a color instead of using three pixels).

Hamagishi as modified above does not expressly teach the sub pixels being laid out so that the adjacent sub pixels differ in color.

However, Yuji teaches an idea of arranging sub pixels on a screen of a 3D image reproduction apparatus [abstract], wherein adjacent sub pixels differ in color [drawings 1 and 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the sub pixel arrangement of the screen of Hamagishi as modified above, with the sub pixel arrangement of the screen of Yuji, so that adjacent sub pixels differ in color, in order to provide uniform color distribution on the images to be displayed, and thus to prevent image degradation.

As to **claim 2**, Hamagishi as modified above teaches the synthesis parallax images (Hamagishi: in a stereoscopic three dimensional display, the images formed on the display is observed as synthesis parallax images to the device-user, and thus the images are displayed as three-dimensional images) [Hamagishi: par. (0064) line 2] comprising images ray-traced in units of the sub pixels (Hamagishi: the device-user of the display of Hamagishi observes a three-dimensional image by tracing light rays backward from a viewing position to the light source).

As to **claim 3**, Hamagishi as modified above teaches the synthesis parallax images comprising images synthesized from a plurality of parallax images in units of the sub pixels [Hamagishi: par. (0066) lines 5-10].

As to **claim 4**, Hamagishi teaches the optical system comprising a pinhole array ("*pinhole array 314*") [fig. 18] in which pinholes are arranged corresponding to the arrayed sub regions.

As to **claim 6**, Hamagishi teaches the optical system comprising a micro-lens array ("*micro-lens array 316*") in which micro-lenses are arranged corresponding to the arrayed sub regions.

As to **claims 5** and **7**, Hamagishi as modified above does not expressly teach the optical system comprising one of a slit array and a lenticular sheet.

However, as the Examiner acknowledges that specifying the type of the optical system as one of a pinhole array, a slit array, a micro-lens array, and a lenticular sheet is not a required design specification, but is one option out of many alternative design variations, it is an obvious matter of design choice to specify the type of the optical system as any one of a pinhole array, a slit array, a micro-lens array, or a lenticular sheet.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Hamagishi as modified above to use any one of a pinhole array, a slit array, a micro-lens array, and a lenticular sheet, as a component for the optical system of the apparatus, since any one of them would perform equally well at directing lights emitted from the screen to a viewer.

As to **claim 8**, Hamagishi as modified above teaches sub pixels of the same color being laid out in a V-shaped pattern [Yuji: drawing 2].

Hamagishi as modified above does not teach sub pixels of the same color being laid out consecutively in a V-shaped pattern.

However, since arranging sub pixels having same color consecutively in a V-shaped pattern is not a required sub pixel arrangement for the display, but is merely one of various alternative arrangements of sub pixels for the display [Appl. specification pg 17-18 and figs 6 and 16], it is an obvious matter of design choice to specify the arrangement of sub pixels having same color in such ways.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any one of various sub pixel arrangements such that adjacent sub pixels differ in color, since any one of various sub pixel arrangements would perform equally well at creating a three-dimensional image while solving a color flicker problem.

As to **claim 9**, all of the claim limitations have already been discussed with respect to the rejection of claim 1 except for the sub pixels having respectively rectangles and extending in a substantially vertical direction of the screen.

Hamagishi as modified above teaches the sub pixels having rectangles and extending in a substantially vertical direction of the screen [Yuji: drawing 2].

As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 2.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 13**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

As to **claim 14**, all of the claim limitations have already been discussed with respect to the rejection of claim 6.

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 7.

As to **claim 16**, all of the claim limitations have already been discussed with respect to the rejection of claim 8.

As to **claim 17**, Hamagishi as modified by Yuji teaches sub pixels of the same color being laid out in a diagonal pattern [Yuji: drawing 2].

As to **claim 18**, all of the claim limitations have already been discussed with respect to the rejection of claim 17.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

November 5, 2007

- s.m.

Sumati Lefkowitz

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER